

AMENDMENT TO THE CLAIMS

1. (currently amended): A method for automated focusing of an electron image in an electron imaging system, the method comprising:

selecting an area on which to focus and impinging an electron beam over the area;

~~monitoring an energy filter cut-off voltage during electron imaging of a substrate;~~

measuring an average intensity of detected electrons over a range of filter bias voltages so as to determine an energy filter cut-off voltage; and

~~adjusting a stage bias voltage~~ setting an operating condition of the electron imaging system ~~in negative correspondence with~~ based on the energy-filter cut-off voltage so as to ~~maintain a focus of the electron image- put the~~ electron image into focus without needing to determine a sharpness or contrast of the electron image.

2. (currently amended): The method of claim 1, wherein the operating condition comprises a stage bias voltage, and wherein, in order to maintain the focus of the electron image, the stage bias voltage is increased when the energy-filter cut-off voltage decreases, and the stage bias voltage is decreased when the energy-filter cut-off voltage increases.

3. (currently amended): The method of claim 1, wherein the operating condition comprises a stage bias voltage, and wherein, in order to maintain the focus of the electron image, the stage bias voltage is increased by a same voltage amount as the energy-filter cut-off voltage decreases, and the stage bias voltage is

decreased by a same voltage amount as the energy-filter cut-off voltage increases.

4. (currently amended): The method of claim 1, ~~wherein, instead of adjusting the stage bias voltage,~~ wherein the operating condition comprises a strength of an objective lens ~~is adjusted~~.

5. (currently amended): The method of claim 1, ~~wherein, instead of adjusting the stage bias voltage,~~ wherein the operating condition comprises a strength of an extraction field ~~is adjusted~~.

6. (currently amended): The method of claim 1, wherein, instead of adjusting the stage bias voltage, a strength of a source voltage level is adjusted.

7. (currently amended): The method of claim 1, wherein said adjusting putting the electron beam in focus without needing to determine the sharpness or contrast of the electron image provides for rough focusing of the electron image, and further comprising using a contrast-based focusing procedure for fine focusing of the electron image.

Claims 8-10. (canceled):

11. (currently amended): A system for automated focusing of an electron image in an electron beam inspection apparatus, the apparatus ~~including an autofocusing means that comprises:~~ system comprising:

means for selecting an area on which to focus and for impinging an electron beam over the area;

~~means for monitoring an energy filter cut-off voltage during electron imaging of a substrate~~ measuring an average intensity of detected electrons over a range of filter bias voltages so as to determine an energy filter cut-off voltage;
and

control ~~means for adjusting~~ configured to set a stage bias voltage of the electron beam inspection apparatus ~~in negative correspondence with~~ based on the energy-filter cut-off voltage so as to ~~maintain a focus of an electron image~~ put the electron image into focus without needing to determine a sharpness or contrast of the electron image.

Claims 12-21. (canceled)

22. (currently amended) The ~~apparatus~~ system of claim 11, wherein, in order to maintain the focus of the electron image, the control means is further configured to increase the stage bias voltage ~~is increased~~ when the energy-filter cut-off voltage decreases, and to decrease the stage bias voltage ~~is decreased~~ when the energy-filter cut-off voltage increases.

23. (currently amended) The ~~apparatus~~ system of claim 11, wherein, in order to maintain the focus of the electron image, the control means is further configured to increase the stage bias voltage ~~is increased~~ by a same voltage amount as the energy-filter cut-off voltage decreases, and to decrease the stage bias voltage ~~is decreased~~ by a same voltage amount as the energy-filter cut-off voltage increases.